

Security Level:

25G EPON upstream Power Budget Analysis

Dekun Liu
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Consideration on 25G upstream power budget

- From the low cost consideration, avoiding pre-amplifier in OLT is good .
- Enabling the “uncooled DML” can be used for 25G ONUs are very important for the low cost of ONU.
- The best way is trying to meet the above two as the best as we can, but If the above two are too difficult to achieve at the same time, we should make sure the low cost of ONU first.

25G DML capability

[harstead_3ca_1a_0716](#)

| AVPmin (dBm) | number | mean | σ |
|--------------|--------|------|----------|
| EML | 6 | 4.5 | 0.8 |
| cooled DML | 8 | 7.0 | 1.2 |
| uncooled DML | 6 | 4.7 | 1.5 |
| ER (dB) | | | |
| EML | 6 | 7.5 | 0.8 |
| cooled DML | 8 | 5.3 | 0.9 |
| uncooled DML | 6 | 4.7 | 1.0 |

[liu_3ca_4_0517.pdf](#)

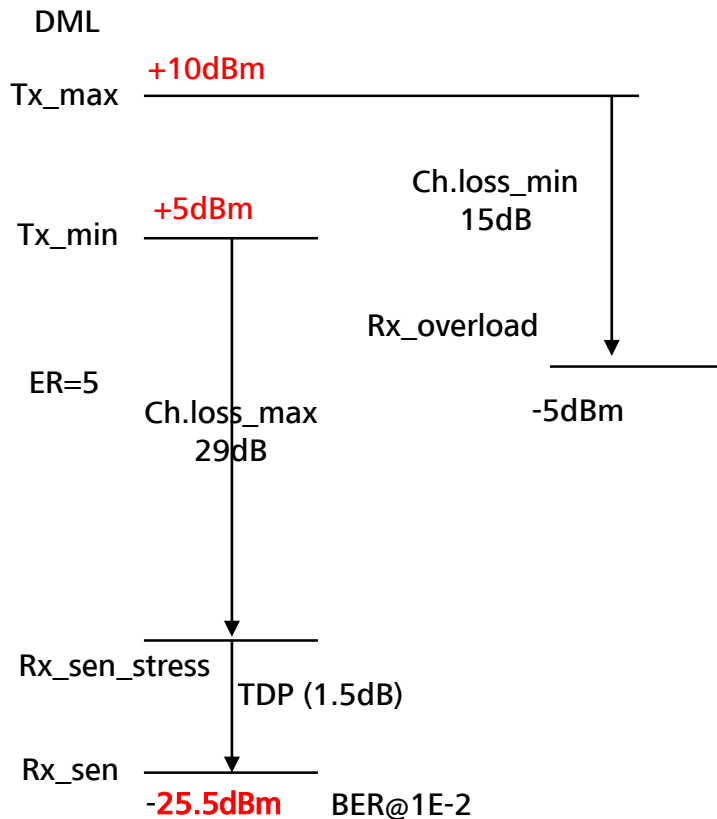
| | 25G EML | | 25G cooled DML | | 25G uncooled DML | |
|----------|-------------|---------|----------------|---------|------------------|---------|
| | Power (dBm) | ER (dB) | Power (dBm) | ER (dB) | Power (dBm) | ER (dB) |
| vendor 1 | 3~4 | 8 | 7 | 4.5 | 5~6 | 4.5 |
| vendor 2 | 3 | 8 | 5 | 5 | 4 | 4 |
| vendor 3 | 4 | 6 | 4 | 4 | xx | xx |
| vendor 4 | 2.5 | 8 | 5.8 | 4 | xx | xx |
| vendor 5 | 4.3 | 8 | 5.5 | 4.5 | 4 | 4 |
| vendor 6 | 4.5 | 8 | 6 | 5 | 4 | 4 |

4dBm launch power seems the most suitable spec for 25G uncooled DML, but 5dBm also seems OK with some effort.

4~5dB ER is the most appropriate spec for 25G uncooled DML.

Upstream power levels analysis

Enhanced FEC: 25G PR30



- 5dBm launch power enables uncooled DML in OLT side
- Considering -24dBm@1E-3 is feasible for 25G burst mode APD without pre-amplifier (harstead_3ca_2_0717), -25.5dBm@1E-2 is feasible with an enhanced FEC for 25G APD
- Such a spec can meet our two requirements at the same time (on amplifier in OLT and uncooled 25G ONU) with the effort in both ends.

Motions :

- Adopt +5dBm launch power as the spec for 25G EPON PR30 ONU.

Thank you

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